

December 10, 2002

Ms. Kelly Davis
Landscape Architect
Planning and Development Division
Fairfax County Park Authority
12055 Government Center Parkway
Suite 421
Fairfax, Virginia 22035

**Re: Spring Hill Park Recreational Center Expansion –
Existing Traffic Conditions. PHR+A F-11687-1-0.**

Dear Ms Davis:

The following is a summary of existing weekday traffic conditions at Spring Hill Park Recreational Center, located in McLean, Virginia. PHR+A has collected data for the study area intersections and evaluated the existing traffic conditions. A weekday parking survey of both on-site and off-site parking areas, was also performed before and after the peak hour intersection counts.

PHR+A proposed to conduct a weekend (Saturday) parking survey between 10 AM to 3 PM, when the soccer tournaments were planned to take place. The five hour parking survey was expected to reflect the peak usage conditions at the park. The survey was planned for November 16, 2002, but the games were cancelled due to the rain. PHR+A then planned to conduct the survey on November 23, 2002, but did not perform the survey, as directed by the Park Authority, since the number of games scheduled on that Saturday were only occurring on 3 fields, with participants 12 years old or less. This tournament was below the average number of games and PHR+A concluded that the traffic as well as parking data would not reflect the peak usage conditions at the site. As November 23, 2002 was the last weekend of the games for this season, the parking survey was postponed until the spring season.

Existing Traffic Conditions

The site is located in the northeast quadrant of Lewinsville Road (VA Route 694)/Spring Hill Road (VA Route 684) intersection. It is accessed via entrances from Spring Hill Road and Artnauman Court. Adjacent to the site, Lewinsville Road provides a single travel lane along eastbound direction, with a parking lane

and two travel lanes along westbound direction. A Two-Way-Left-Turn-Lane (TWLTL) also exists in the center of Route 694 along the site frontage for left turns. Artnauman Court provides access to the Park as well as the residential detached units along the west side of the roadway. No additional vehicular/pedestrian connection exist to the east between the recreational facilities and Condon Manor of McLean development (Falstaff Road). An inter parcel connection exists between parcel 1D (the north fields) and the McLean Hunt Estates connecting to Winter Hunt Road.

Spring Hill Road (VA Route 684) is a two lane undivided roadway, with separate left turn lanes provided at its intersection with Randwood Street opposite the Park Entrance. A separate right turn lane is provided to turn into Spring Hill Recreational Center along northbound Spring Hill Road, which continues up to Chadsworth Court in the north. The southbound Spring Hill Road approach provides a shared right-through lane and an approximately 200 ft long left turn lane at the intersection. Randwood Street terminates as a cul-de-sac to the west.

Lewinsville Road/Spring Hill Road intersection is a skewed intersection under signal control, with free flow right turn lanes along eastbound and westbound Lewinsville Road. Left turn movements are shared with through movements for three of the approaches, with heavy left turning volumes in a separate lane observed along westbound Lewinsville Road to southbound Spring Hill Road during the PM peak hour. A separate right turn lane is provided for northbound Spring Hill.

The site frontage has curb and gutter with sidewalks on both public roads. No future roadway improvements are programmed for Lewinsville Road and Spring Hill as per the current Fairfax County Transportation Plan.

Traffic Counts

PHR+A collected daily directional link traffic volumes along Lewinsville Road (VA Route 694) between Thursday, November 14, 2002 and Tuesday, November 19, 2002. PM peak period intersection turning movement volumes were also collected at Lewinsville Road/Spring Hill Road and Lewinsville Road/Artnauman Court on Thursday November 14, 2002 between 4 and 6 PM. PM Peak period counts were collected at Spring Hill Road/Randwood Street/Park Entrance on Wednesday, November 20, 2002. The PM peak hour occurred between 4:30 to 5:30 PM for Lewinsville Road/Spring Hill Road intersection. The peak hour occurred between 4:15 to 5:15 PM for Spring Hill Road/Park Entrance intersection and between 5:00 to 6:00 PM for Lewinsville Road/Artnauman Court intersection.

Based on link traffic volumes collected along Rt 694 and the available VDOT historical daily traffic volumes for Rt 694 and Rt 684, PHR+A calculated the average growth rate along both the roadways, as presented in Table 1. Daily traffic volumes along Lewinsville Road experienced a 0.5 percent average growth rate since 1995. Daily traffic volumes along Spring Hill Road were found to decrease since 1995.

TABLE 1—HISTORICAL TRAFFIC VOLUME TRENDS

Year ⁽¹⁾	Lewinsville Road (Route 694)	Spring Hill Road (Route 684)
2002	15,300	N/A
2001	14,000	5,600
2000	15,000	6,000
1995	15,900	9,700
Average Growth ⁽²⁾	0.5 % / year	-7.9 % / year

(1) Source: VDOT Traffic Engineering Division, Average Daily Traffic Volumes, Fairfax County

(2) Average of growth trends between 1995 and 2002/2001

Based on the counts, the Average Daily Traffic (ADT) volumes on Lewinsville Road in November 2002 was 15,300 vehicles per day (vpd) for the weekday. The PHR+A counts for 2002 reflect an adjustment for heavy vehicles and vehicles in the TWLTL. Weekend volumes for Saturday were 8,700 vpd or 43 percent less than weekday conditions, however, no soccer games were scheduled on that day. The average hourly weekday and weekend volume trends are presented in the attached Chart 1.

The entrance off Artnauman Court was observed to be utilized more than the entrance off Spring Hill Road, with approximately 55 percent of the traffic exiting the recreational center from that entrance. Table 2 presents the driveway utilization for the Spring Hill Park Recreational Center. Queuing of vehicles at the Artnauman Court approach at its intersection with Lewinsville Road was also observed during the PM peak period. The parking lot entrance next to Lewinsville Road was blocked during the majority of the peak hour, based on queues along Artnauman Court at Lewinsville Road intersection. Left turning vehicles from Artnauman Court to eastbound Lewinsville Road were observed to experience delays to turn safely during the peak hour. Based on observations, the left turning vehicles waited in the TWLTL before merging with the eastbound traffic lane.

TABLE 2 - DRIVEWAY UTILIZATION

				PM Peak Hour		
Driveway	Roadway	Direction	Vol	Total Vol	Percentage Directional Vol	Driveway Utilization
Via Artnauman Court*	Lewinsville Road west	EB - Left	35	72	22%	57%
		SB - Right	37			
	Lewinsville Road east	WB - Right	41	110	35%	
		SB - Left	69			
Via Spring Hill Road	Spring Hill Road south	NB - Right	41	74	23%	43%
		WB - Left	33			
	Spring Hill Road north	SB - Left	32	65	20%	
		WB - Right	33			

Vol = Peak Hour Volume

Percentage based on the total traffic volume during the peak hour

* Volumes shown are volumes at Artnauman Court/Lewinsville Road intersection

Based on existing traffic turning movement volumes at the site entrances (Table 2), traffic distributions are computed for the subject site and are presented in Table 3. Note that the entrance via Spring Hill Road is used more than expected during the weekdays to access the recreational center.

TABLE 3
SITE TRAFFIC DISTRIBUTIONS

Roadway	Distributions
Lewinsville Road East	35%
Lewinsville Road/Spring Hill Road south/southwest	45%
Spring Hill Road north	20%

The weekday peak hour turning movement volumes were analyzed using the Highway Capacity Software, version 4.1c. The results of the analysis are summarized in Table 4. Level of Service (LOS) is based on average delay for the vehicles, also measured in seconds. The LOS ranges from letter grade "A" (best operating conditions) to letter grade "F" (worst operating conditions) with VDOT guidelines suggesting LOS "D" as minimum desirable intersection operations.

TABLE 4
LEVELS OF SERVICE SUMMARY – EXISTING TRAFFIC CONDITIONS

Intersection		PM Peak Hour	
		LOS	Delay*
Lewinsville Road (Rt 694) @ Spring Hill Road (Rt 684) (Signalized)	EB	F	195.0
	WB	F	88.9
	NB	F	85.5
	SB	F	91.9
	Overall	F	100.3
Lewinsville Road (Rt 694) @ Artnauman Court (Unsignalized)	EB-Left	B	10.6
	SB -Appr.	E	40.3
Spring Hill Road (Rt 684) @ Randwood Street/Park Entrance (Unsignalized)	NB-Left	A	7.9
	SB-Left	A	8.1
	EB-Appr.	B	12.9
	WB -Appr.	B	14.0

*Delay in seconds

Overall, the weekday traffic volumes exceed the capacity of the signal, resulting in LOS ‘F’ conditions. Note that the HCS methodology is recommended for signals up to 120 seconds cycle length, while the subject signal operates at 150 seconds cycle length. The access out of the park via Lewinsville Road operates at LOS ‘E’, due to the left turns, while site egress at Spring Hill is LOS ‘B’. The left turns into the site, from the public streets operate at desirable LOS ‘B’ or better during the PM peak hour.

The existing traffic conditions, peak hour turning movement volumes and LOS at the intersections along with the average daily traffic volumes are presented in the attached graphic (Figure 1).

As the scheduled games for Saturday, November 16, 2002 were cancelled due to weather conditions, the weekend daily traffic volumes, presented on the attached graphic, represent volumes without the park usage for outdoor soccer. The weekend traffic volumes peak during mid-day and match the mid-day peak volumes of a weekday PM peak hour as shown in Chart 1.

Trip Generation

For future traffic projections, the land uses are converted into vehicle trips using trip rates from national and local resources. PHR+A calculated weekday PM peak hour trip rates for the existing Spring Hill Park Recreational Center, for comparison, for similar land uses in the *Institute of Transportation Engineers (ITE) Trip Generation Manual*. Trip rates were also derived using the existing weekday traffic

volumes turning into and out of the site as well as existing available parking spaces at the site. The weekday PM peak hour trip rates are presented in Table 5.

TABLE 5 – WEEKDAY PM PEAK HOUR TRIP RATES

ITE CODE*	LAND USE	VARIABLE**	PM PEAK TRIP RATE#
412	County Park ⁺	acres	0.07
412	County Park (Generator) ⁺⁺	acres	0.59
417	Regional Park ⁺	acres	0.20
417	Regional Park (Generator) ⁺⁺	acres	0.26
435	Multi-purpose Recreational Center ⁺	acres	5.77
495	Recreational Community Center ⁺	ksf	1.76
495	Recreational Community Center (Generator) ⁺⁺	ksf	2.27
-	Field Counts ^{##}	acres	6.96
-	Field Counts ^{##}	spaces	1.18
-	Field Counts ^{##}	ksf	9.12

* ITE Trip Generation Manual Land Use Code

** ITE Trip Generation Manual Independent Variable based on which trip rates are derived

+ Rates based on peak hour of adjacent street

++ Rates based on peak hour of the generator (busiest time of use)

Two way trips (in and out)

PHR+A November 2002 Peak Hour field counts

ksf = 1,000 gross square feet building area

Existing Facility: 46.1 acres

273 parking spaces (provided by others)

Approximately 35.2 ksf recreational building

The various PM peak hour trip rates were derived for comparison purposes. PHR+A would derive the weekend trip rates after the proposed survey in Spring. For the weekday conditions in November, the effective site trip rate (on a per building size and per acre variables) exceed the national averages, but is comparable to a multi-purpose recreational center use. Application of national county park rates per acre would not be appropriate.

Parking Counts

A weekday parking survey was conducted for the half hour before and after the weekday peak period counts on Thursday, November 14, 2002. The results of the survey are attached as Parking Survey table. Please note that no parking analysis was performed as the data collected for the weekday scenario is limited and is collected only to gauge the parking situation at the site. The data indicates that approximately 35 percent of the available on-site parking is used on a typical

weekday, during PM peak period. As discussed earlier, we were unable to conduct a weekend parking survey before the end of current game season, and the parking survey will be conducted during the spring season games.

Recommendations

Based on the existing traffic conditions analysis, The following are our recommendations for the full traffic study to be performed in Spring of next year.

- Lewinsville Road/Spring Hill Road intersection and Lewinsville Road/Artnauman Court intersection would require traffic mitigation measures to improve the undesirable Levels of Service (LOS). This may include new lanes and/or traffic control.
- A weekend parking survey is suggested in the spring to include on-site and off-site parking as shown in attachment, to define parking variables for the expansion.
- Based on field observations, the entrance to the on-site parking lot north of Lewinsville Road, adjacent to Artnauman Court, was blocked for majority of PM peak hour. An alternate circulation may need to be investigated.

Peak period traffic and parking conditions can be projected to reflect the spring conditions using the existing data, national trends and counts at other regional sites. Directional link traffic volumes may be collected again during the spring season to validate the peak hour projections. If you require additional information, please contact myself or Dave Steigler at (703) 449-6700.

Sincerely,

PATTON HARRIS RUST & ASSOCIATES
A Professional Corporation

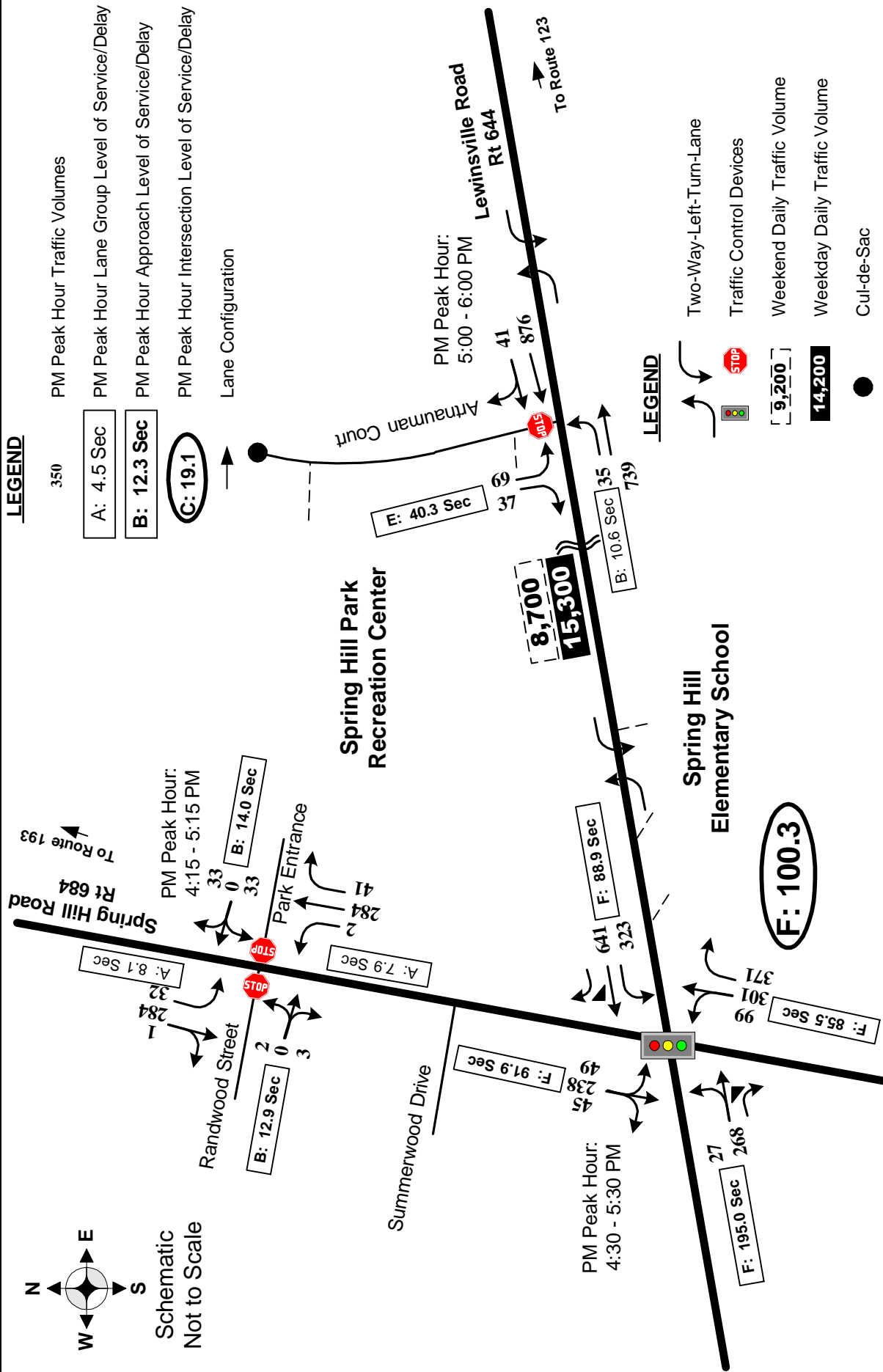
Douglas R. Kennedy, P.E.
Director of Transportation Planning
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Enclosures:

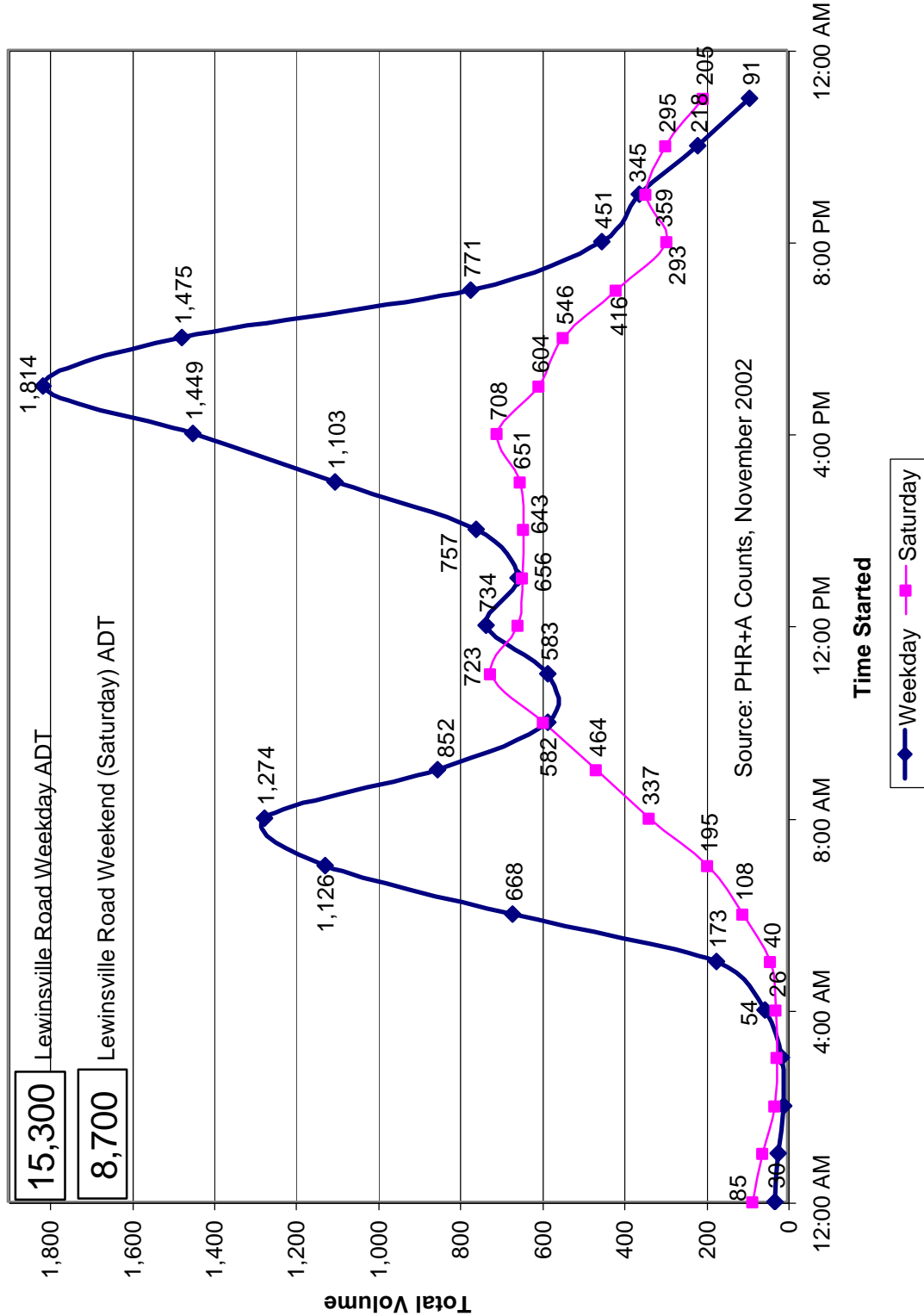
- Figure 1: Spring Hill Park – Existing Traffic Conditions
- Chart 1: Lewinsville Road Existing Hourly Traffic Volumes
- Parking Survey: Spring Hill Park – Parking Weekday Parking Study

cc: Dave Steigler, PHR+A
Kamesh Mantravadi, PHR+A

Spring Hill Park Master Plan



Lewinsville Road Existing Conditions
Hourly Weekday/Weekend Traffic Volume Trends



PARKING SURVEY

NOVEMBER 2002

SPRING HILL PARK PARKING STUDY
 PHR+A 11687-1-0

Day: Thursday November 14, 2002

Collected by: PHR+A/KM

Location		Total Vehicles include all parked vehicles at time of observations													
NPA = No Parking Area		Area 1		Area 2		Area 3		Area 4		Area 5		Area 6		Area 7	
On-Site lot at Spring Hill Road		On-Site lot at Spring Hill Road		On-Site lot		On-Site parking-rear of rec center		On-Site lot at Lewinsville Road		Artnauman Court Parking		Lewinsville Road Parking west of Falstaff Road		Spring Hill Elementary School Parking	
40 Spaces parking lot 8		128 Spaces parking lot 10		10 Spaces parking lot 11		85 Spaces parking lot 9		15 Spaces east Side		20 Spaces north side		100 Spaces south side			
Total Vehicles	NPA	Total Vehicles	NPA	Total Vehicles	NPA	Total Vehicles	NPA	Total Vehicles	NPA	Total Vehicles	NPA	Total Vehicles	NPA	Total Vehicles	NPA
27		52		2		4		0		0		0		36	
38		44		7		2		0		0		0		7	
Location		Area 8		Area 9											
Spring Hill Road parking		Spring Hill Road parking		Chadsworth Ct Parking		15 Spaces									
0 Spaces		0 Spaces		15 Spaces											
east side		west side		east side		west side									
Total Vehicles	NPA	Total Vehicles	NPA	Total Vehicles	NPA	Total Vehicles	NPA								
0		0		2		1									
0		0		0		3									
Location		Area 8		Area 9											
Spring Hill Road parking		Spring Hill Road parking		Chadsworth Ct Parking		15 Spaces									
0 Spaces		0 Spaces		15 Spaces											
east side		west side		east side		west side									
Total Vehicles	NPA	Total Vehicles	NPA	Total Vehicles	NPA	Total Vehicles	NPA								
0		0		2		1									
0		0		0		3									